

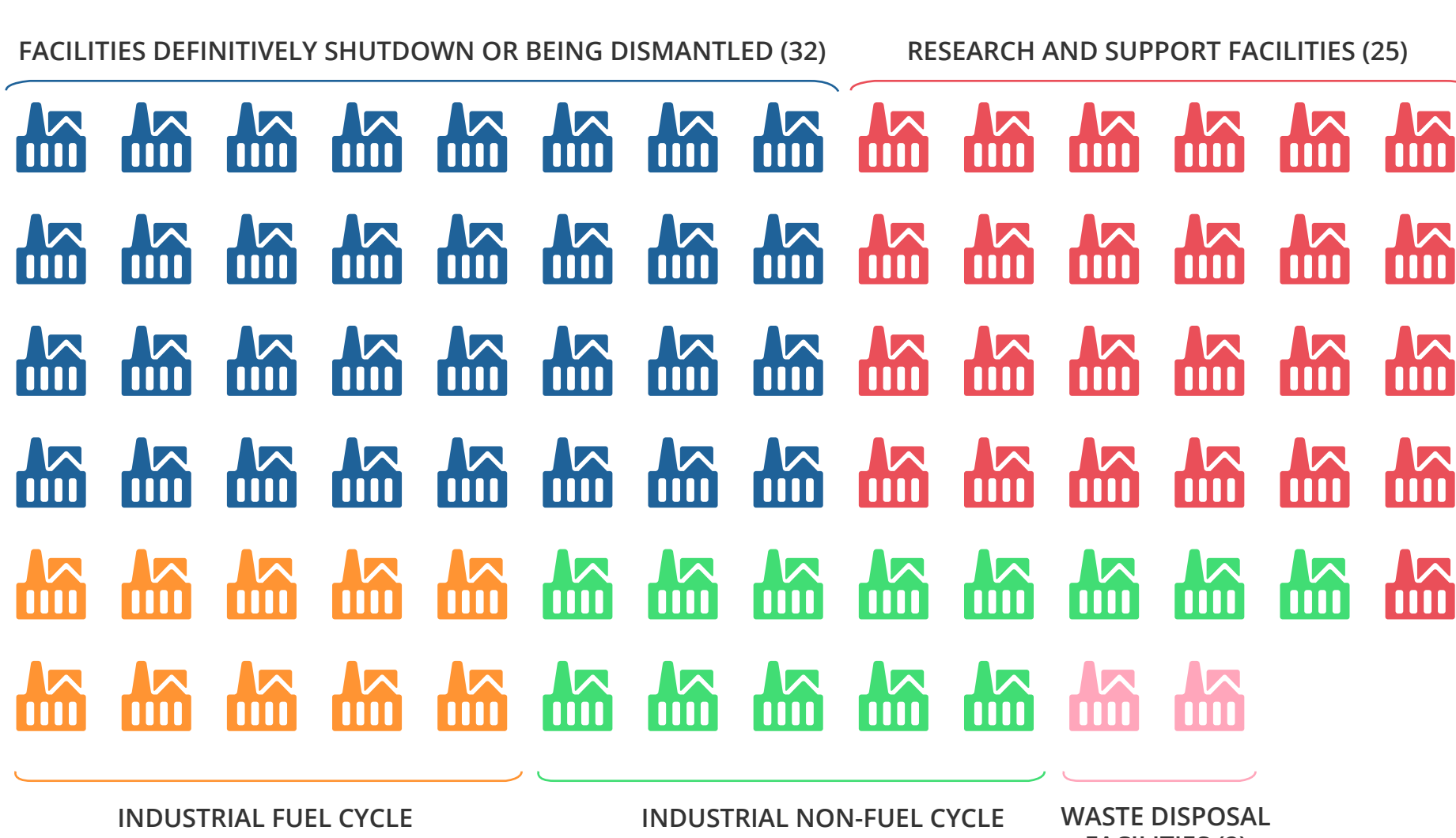
1 WHAT IS AT STAKE?

Lessons learned by IRSN from its analysis of significant events reported regarding the 82 civil basic nuclear installations (INBs) other than nuclear power plants (NPPs). These facilities include plants, laboratories, facilities for the treatment, disposal and storage of waste, facilities which have been decommissioned, and research reactors. This report, published every two years, covers events reported in 2013 and 2014.

82 BASIC NUCLEAR INSTALLATIONS (OTHER THAN NPPs)

The number and nature of the facilities followed did not change in 2013-2014 compared to 2011-2012. Unlike power reactors, which are technically similar and operated by a single licensee, INBs other than NPPs are extremely diverse in nature and their safety is under the responsibility of around twenty different licensees.

CLASSIFICATION BY TYPES OF FACILITY



FACTORS TAKEN INTO ACCOUNT BY IRSN TO ACHIEVE ITS OVERALL ASSESSMENT

IRSN performs a critical analysis of 'Significant Events Reports' (or CRES) submitted by the licensees to the French Nuclear Safety Authority (ASN). This analysis shows that margins of progress exist as to the quality of these events reports, in particular concerning the depth of the identified causes – and especially when organisational aspects are involved – and the suitability of the corrective actions.

SIGNIFICANT EVENTS

Significant events can refer to 'significant safety-related events' or 'significant radiation protection-related events' or 'significant environmental protection events'. ASN classifies each event on the "International Nuclear and radiological Event Scale" (INES) which consists of seven levels (plus Level 0, below the scale, corresponding to non-compliance with no safety importance).

AREAS OF IMPACT

SAFETY-RELATED EVENTS

Events with a potentially significant impact on the safety of the facility.

RADIATION PROTECTION-RELATED EVENTS

Events posing a potential threat to the health of workers or the population due to exposure to ionising radiation.

ENVIRONMENTAL PROTECTION EVENTS

Events with impact on the surrounding environment or on a larger area.

LEVELS ON INES SCALE

LEVELS 0 AND 1

Non-compliance and anomalies
In France, several hundred non-compliances (Level 0) per year, and about one hundred anomalies (Level 1) per year.

LEVELS 2 AND 3

Incidents
In France, a few cases each year. Since 1981, three Level 3 incidents, and only one for facilities other than NPPs.

LEVELS 4 TO 7

Accidents
Internationally, two major accidents (Level 7) in Chernobyl (Ukraine) in 1986 and Fukushima (Japan) in 2011.

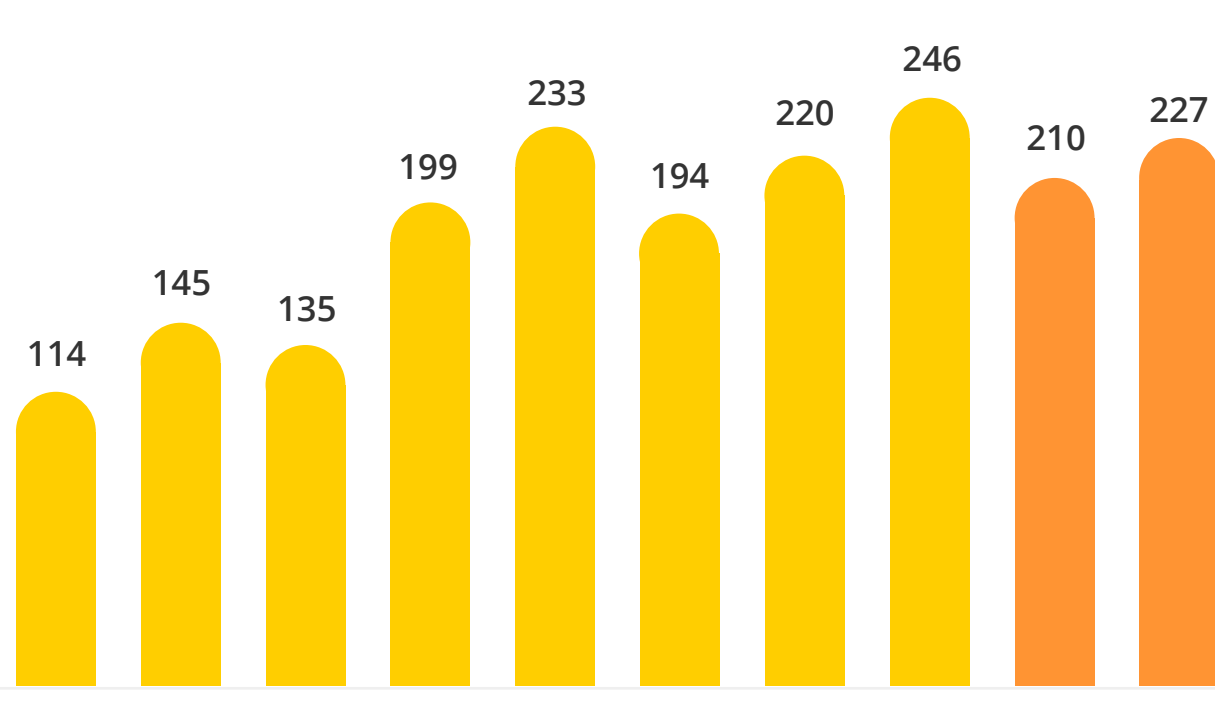
2 ANALYSIS OF SIGNIFICANT EVENTS IN 2013 AND 2014

In 2013 and 2014, the number of significant events remained stable. It tends to stabilise around 200 to 220 events per year. However, this figure is not an indicator of the safety of the facilities. It reflects dysfunctions that need to be investigated and understood, in order to identify relevant strategies for improving safety.

219 EVENTS AVERAGE FOR THE PERIOD 2013-2014

Since the increase observed in 2008 and 2009, the annual number of events reported has tended to stabilise.

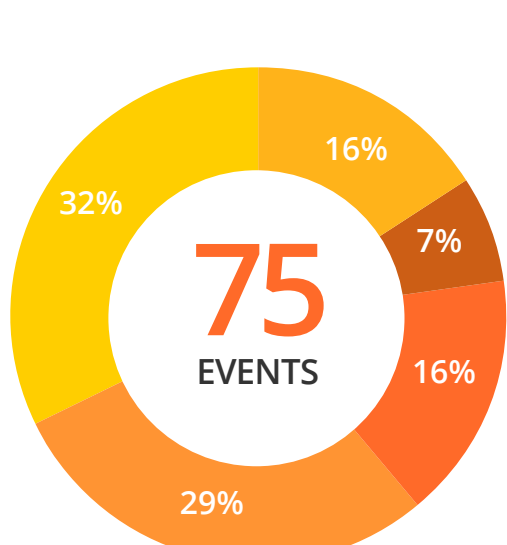
EVOLUTION OF THE NUMBER OF EVENTS DECLARED SINCE 2005



In 2013 and 2014, around 70% of the events were related to safety, the majority related to the radioactive material dispersion risks. As in 2011 and 2012, none of the events reported to ASN had any significant consequences for workers, the public or the environment, nor did they lead to any major failure in the risk control systems applied at these facilities.

RADIATION PROTECTION

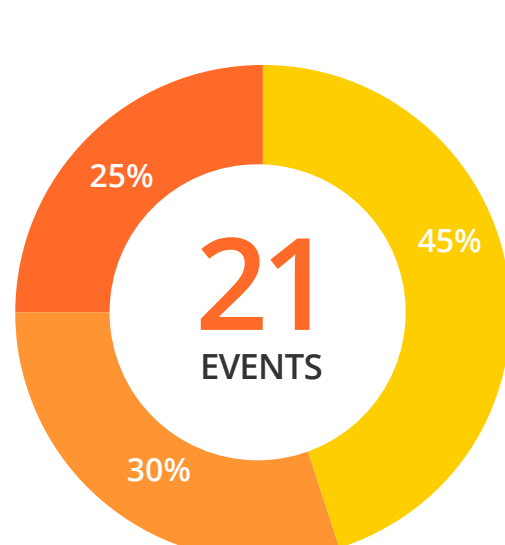
75 significant events related to ionising radiation exposure risks for workers in 2013-2014. This number is similar to that for 2011 and 2012. The events are as follows:



- Internal exposure of workers
- External exposure of workers
- Inadequacies in the preparation of clean-up or decommissioning work
- Non-compliance with access conditions in controlled areas or radiological zoning implemented
- Others (radiological cleanliness, radioactive sources, gamma ray inspections)

HANDLING OPERATIONS

For 2013 and 2014, 21 events related to the risks linked with handling operations, significantly fewer than in 2011 and 2012 (29 events). The events are as follows:



- Deviations from safety requirements
- Handled loads actually falling
- Others (equipment degradation, equipment malfunctions)

EVENTS ANALYSIS

Analysis of events by IRSN identified recurring or generic causes, and lessons to be learned. It is necessary to emphasize the importance of human and organisational factors in the feedback from significant events.

IMPROVEMENTS OBSERVED

- Efforts made by the licensees to **increase reliability of organisational and human measures related to handling operations**, in particular at the spent fuel reprocessing plant of AREVA NC La Hague and in the radioactive waste storage facilities operated by the CEA.
- Important improvement program deployed by the licensee of the FBFC plant in Romans-sur-Isère to **enhance operating practices, particularly regarding management of criticality risks (prevention of uncontrolled chain reactions)**.

PROPOSALS FOR IMPROVEMENT

- Ensuring full control over the **safety documentation of facilities**. IRSN's cross-cutting analysis of events reveal a large number of cases for which parts of the safety documentation are not fully understood at the facilities, are not applied, are inaccurate or not applicable to the situation.
- Ensuring in-depth and comprehensive planning of installation clean-up and dismantling operations**. Risks of worker exposure to ionising radiation are higher during these operations which may require personnel to work in close proximity to radioactive materials.
- Ensuring more rigorously that personnel observes **access conditions to controlled areas and complies with the radiological zoning implemented**.

